Electronic Version
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Claims

[c1] A light weight roll-up door for use in closing a rear opening of a truck or trailer, the roll-up door comprising:
multiple elongated panels, each panel having a generally rectangular periphery and formed by extrusion of a light weight material and having inner and outer opposing surfaces spaced from each other and at least one elongated groove integrally formed in the inner surfaces at the edge portions thereof;
a hinge assembly, snap fit to the panels at the upper and lower edges thereof through integral snap fit fasteners that are releasably received in the at least one elongated groove of the panels; and
outer complementary arcuate portions on the panel upper and lower edges that fill a gap at the facing edges of the panels as the panels rotate about the hinge.

[c2] The lightweight roll-up door according to claim 1 wherein the snap fit fasteners comprise compressible fasteners.

[c3] The roll-up door according to claim 2, wherein the compressible fastener comprises two spaced resilient fingers

defining a gap therebetween and the compressible fastener is compressed by deflecting at least one of the fingers into the gap.

[c4] The roll-up door according to claim 3, wherein the outer cross-sectional periphery of the fastener generally conforms to the cross-sectional shape of the groove.

[c5] The roll-up door according to claim 1, wherein the hinge assembly comprises multiple hinge elements, with each hinge element having its own first and second hinge plates and hinge.

[c6] The roll-up door according to claim 5, wherein one of the hinge elements includes an axle seat.

[c7] The roll-up door according to claim 6, wherein the axle seat is a generally circular tubular portion the interior of which forms an opening.

[c8] The roll-up door according to claim 7, and further comprising a wheel assembly comprising an axle and a wheel rotatably mounted to the axle and the axle is received within the axle seat.

[c9] In a roll-up door for selectively closing an opening in a trailer, the opening being defined in part by a bottom wall of the trailer, the roll-up door comprising multiple

elongated panels having opposing interior and exterior walls and an upper and lower sides connecting an upper portion of the walls and a lower portion of the walls, respectively, the panels are stacked in an upper side to lower side orientation, a hinge rotatably couples adjacent panels, and one of the panels is a bottom panel whose lower side is adjacent the trailer bottom wall when the roll-up door is mounted to the trailer and in a closed position, and a latch assembly mounted to the bottom panel and adapted to be selectively coupled to the trailer to lock the roll-up door in the closed position, the improvement comprising:

the bottom panel is extruded and has a predominately hollow interior between and exterior and interior walls, a latch recess in the exterior wall and multiple mounting supports disposed within the hollow interior and extending between the latch recess and the interior wall, and the latch assembly is received in the latch recess.

[c10] The improvement of claim 9, wherein the latch recess is located on the exterior wall for placement of the latch assembly in position to selectively couple with the trailer..

[c11] The improvement of claim 10, wherein the latch assembly comprises a mounting plate and the latch recess has a height substantially equal to the height of the mount-

ing plate to thereby fix the vertical position of the latch assembly when it is positioned within the latch recess.

[c12] The improvement of claim 11, and further comprising an alignment indicia on the front wall of the panel for use in laterally aligning the latch assembly relative to the bottom panel.

[c13] The improvement of claim 9, wherein the mounting supports comprise extruded walls extending between the latch recess and the interior wall and arranged in spaced pairs and defining a channel therebetween in which a fastener can be received.

[c14] The improvement of claim 13, wherein the spacing of the walls is such that a head of a mechanical fastener used to fasten the latch assembly to the bottom panel will overly at least a portion of at least one of the walls of a pair.

[c15] The improvement of claim 14, wherein the spacing of the walls is such that it is less than the outer diameter of a threaded fastener.

[c16] The improvement of claim 9, and further comprising a backing plate recess on the interior and at least part of the backing plate recess is opposite a portion of the latch recess.

[c17] The improvement according to claim 16, wherein the mounting supports extend between the latch recess and the backing plate recess.

[c18] The improvement according to claim 9, and further comprising a reflector recess formed in the exterior wall, located above the latch recess and of a size to receive therein a conspicuity reflector.

[c19] In a roll-up door for selectively closing an opening in a trailer, the opening being defined in part by a bottom wall of the trailer, the roll-up door comprising multiple elongated panels having opposing interior and exterior walls and an upper and lower sides connecting an upper portion of the walls and a lower portion of the walls, respectively, the panels are stacked in an upper side to lower side orientation, a hinge rotatably couples adjacent panels, and one of the panels is a bottom panel whose lower side is adjacent the trailer bottom wall when the roll-up door is mounted to the trailer and in a closed position, and a latch assembly mounted to the bottom panel and adapted to be selectively coupled to the trailer to lock the roll-up door in the closed position, the improvement comprising:
the bottom panel is extruded and has a predominately hollow interior between and exterior and interior walls, a

reflector recess formed in the exterior wall, located near a bottom portion of the panel and of a size to receive therein a conspicuity reflector.

[c20] A roll up door according to claim 19 wherein the bottom panel further has a latch recess in the exterior thereof at the bottom portion thereof and the latch assembly is mounted in the latch recess, and wherein the reflector recess is formed above the latch recess.

[c21] In a roll-up door for selectively closing an opening in a truck or trailer, the opening being defined in part by a bottom wall of the trailer, the roll-up door comprising multiple elongated panels having opposing interior and exterior walls with a relatively hollow interior and an upper and lower sides connecting an upper portion of the walls and a lower portion of the walls, respectively, the panels are stacked in an upper side to lower side orientation, a hinge rotatably couples adjacent panels together, each of the panels has at lateral sides thereof at least a pair of wheel assemblies comprising a roller that is adapted to mount into a rail at the side of the truck or trailer opening and a wear resistant axle that is received in a socket in the panels, and one of the panels is a bottom panel whose lower side is adjacent the trailer bottom wall when the roll-up door is mounted to the trailer and in a closed position, and a latch assembly mounted

to the bottom panel and adapted to be selectively coupled to the trailer to lock the roll-up door in the closed position, the improvement comprising:
a socket made of a wear resistant material attached to each of the lateral sides of the panels and receiving an axle of the wheel assembly therein.

[c22] A roll-up door according to claim 21 wherein the sockets are formed of a wear-resistant metal.

[c23] A roll up door according to claim 21 wherein the sockets further includes a mounting plate through which the sockets are mounted to the panels.

[c24] A roll up door according to claim 23 wherein the sockets are integrally formed with the mounting plates.

[c25] A roll up door according to claim 24 wherein the axles are made of metal.

[c26] A roll up door according to claim 25 wherein the panels are extruded and have open ends.

[c27] A roll up door according to claim 26 wherein the panels are formed of a rigid plastic material.

[c28] A roll up door according to claim 26 wherein the panels are formed of a lightweight metal.

[c29] A roll up door according to claim 26 and further comprising end caps that close the open ends of the panels and further comprise mounting tabs that fit within open ends of the panels.

[c30] A roll up door according to claim 29 wherein the plates are fastened to the panels with mechanical fasteners that extend through the exterior and interior walls, though the mounting tabs of the end plates and through the socket mounting plate.

[c31] A roll up door according to claim 21 wherein the panels are extruded and have open ends.

[c32] A roll up door according to claim 31 wherein the panels are formed of a rigid plastic material.

[c33] A roll up door according to claim 31 wherein the panels are formed of a lightweight metal.

[c34] A roll up door according to claim 31 and further comprising end caps that close the open ends of the panels and further comprise mounting tabs that fit within open ends of the panels.

[c35] A roll up door according to claim 34 wherein the plates are fastened to the panels with mechanical fasteners that extend through the exterior and interior walls, though

the mounting tabs of the end plates and through the socket mounting plate.

[c36] A roll up door according to claim 31 wherein the end caps are made of an injected molded plastic.

[c37] A roll up door according to claim 21 wherein the sockets are made from a tough wear resistant plastic.